AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims, in which Claims 2 and 6 are canceled without prejudice or disclaimer, Claims 7-12 are withdrawn from further consideration, Claims 1 and 3-5 are currently amended, and Claim 13 is newly presented.

1. (Currently Amended) A method for forging a hollow rack bar from a [[metal]] blank pipe made of metal, comprising ~~the steps of~~:

(a) subjecting the blank pipe to a plastic deformation process for an adjustment of ~~a cross-sectional shape~~ an inner diameter and an outer diameter of the [[metal]] blank pipe along an entire periphery of the blank pipe;

(b) subjecting a predetermined outer part of the blank pipe to a flattening process to substantially flatten the predetermined outer part;

([[b]] c) holding said ~~adjusted metal~~ blank pipe after the plastic deformation process and the flattening process by a die having a toothed portion ~~portions~~ so that the toothed portion is ~~portions are~~ contacted with the predetermined outer part of the blank pipe; ~~at its outer surface,~~ and[[;]]

([[c]] d) inserting, under a pressure, a mandrel into the blank pipe held by the die for causing the metal to be flown toward the toothed portion ~~portions~~, thereby forming on the predetermined outer part ~~outer surface~~ of the blank pipe another toothed portion ~~portions~~ having a shape ~~shapes~~ corresponding to a shape [[those]] of the toothed portion ~~portions~~ of the die.

2. (Canceled)

3. (Currently Amended) A method according to claim 1, wherein the step (a) for subjecting the blank pipe to [[a]] the plastic deformation process ~~for an adjustment of a desired cross-sectional shape of the metal blank pipe~~ comprises the steps of:

subjecting the blank pipe to a swaging process for reducing the outer diameter of the blank pipe, and[[;]]

subjecting the [[said]] swaged blank pipe to an ironing process for producing a desired cross-sectional shape of the blank pipe.

4. (Currently Amended) A method for forging a hollow rack bar from a [[metal]] blank pipe made of metal, the method comprising a pre-forming step and a main forming step after the execution of the ~~performing~~ pre-forming step, the pre-forming step comprising ~~comprises the steps of~~:

(a) subjecting the blank pipe to a swaging process for reducing [[the]] an outer diameter of the blank pipe;

(b) clamping the swaged blank [[pip]] pipe by a clamping die of a desired shape at [[the]] an outer periphery thereof, while locating a working core inside the blank pipe[[, and]]; and

(c) withdrawing the working core to expand ~~so that~~ the blank pipe ~~is swaged at it inner diameter side, thereby generating~~ in order to generate a desired shape of [[the]] a hollow cavity of the blank pipe ~~extending~~ expanding in an axial direction and a radial direction ~~directions~~;

said main forming step comprising ~~comprises the steps of~~:

(d) holding the pre-formed blank pipe from its outer side by a rack forming die having a toothed portion ~~portions~~; and

(e) inserting~~, under a pressure,~~ a mandrel to the ~~inner diameter~~ hollow cavity of the blank pipe, thereby forming on an [[the]] outer surface of the blank pipe another toothed portion ~~portions~~ having a shape ~~shapes~~ corresponding to a shape of the toothed portion [[those]] of the rack forming die.

5. (Currently Amended) In a method for forging a hollow rack bar from a metal blank pipe, wherein the blank pipe is, from its outer side, held by a rack forming die so that the blank pipe is subjected to a plastic deformation process for obtaining substantially flattened part, and a mandrel is inserted to the blank pipe under a pressure, thereby forming a hollow rack bar having shape corresponding to a toothed portion of the rack forming die, a performing process ~~the improvement wherein~~ prior to the forging of the hollow rack [[bare]] bar comprising subjecting[[,]] the blank pipe ~~is subjected~~ to a preliminary plastic deformation process for obtaining an adjustment of both of an inner diameter and an outer diameter ~~the cross-sectional shape~~ of the blank pipe along an entire periphery of the blank pipe.

6. (Canceled)

7. (Withdrawn) An apparatus for forging a hollow rack bar from a blank metal pipe, comprising:

a die for holding the blank pipe from its outer surface, said die having at its inner surface toothed portions for forming a rack, and;

a mandrel for inserting, at a pressure, into the blank pipe held by the die, said mandrel having enlarged head for causing, during the insertion, the metal to be expanded outwardly

toward the toothed portions, so that toothed portions corresponding to those at the die are formed on the outer surface of the blank pipe,

said mandrel comprising forging means for causing, during the insertion of the mandrel, the blank pipe to be subjected, at different location along the length, to simultaneous expansive forged actions at different locations of the toothed portions along the length of the mandrel.

8. (Withdrawn) An apparatus according to claim 7, wherein said forging means comprises a plurality of operating heads in the mandrel, of gradually increased operating diameters in the direction of the insertion of the mandrel.

9. (Withdrawn) An apparatus according to claim 7, wherein said forging means comprises an operating head and a plurality of grooves on the operating head spaced along the length of the mandrel, said grooves being inclined opposite to the direction of the inclination of the toothed portions of the die.

10. (Withdrawn) An apparatus for forging a hollow rack bar from a blank metal pipe, comprising:

a die for holding the blank pipe;

a holder for a piece on which toothed portions are formed, and;

a mandrel for inserting, at a pressure, into the blank pipe held by the die, said mandrel being for forging the metal blank so that toothed portions corresponding to the shapes of the toothed portions of the die are formed on the blank pipe, thereby forming a rack bar;

said holder having an opening therethrough, to which said toothed portion forming piece is embedded.

11. (Withdrawn) An apparatus according to claim 10, wherein said opening for embedding the toothed portion piece has, at its ends space along the length, recessed portions of an increased radius.

12. (Withdrawn) An apparatus according to claim 11, further comprising a fluid cylinder built in the holder, said fluid cylinder being for mounting the holder to the die.

13. (New) A method according to claim 4, further comprising:

forming in a cavity of a recess of the clamping die at locations corresponding to locations of the blank pipe corresponding to the ends of rack portion of the product to be forged from the blank pipe; and

obtaining a flow of excessive material as generated during the swaging into said recess, thereby obtaining irregular cross section at said locations of the blank pipe.